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From Hell to Babel: Creating Value in the Ecocene

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ABSTRACT

We are in the belly of an environmental Hell, yet we should not aspire to forge ourselves a utopian Eden to find a sense of ongoingness in these challenging times but unleash a biospherical Babel from which hybrid practices, paradoxes, and as yet unknown modes of being in the world may be discovered. While we do not yet have the language or apparatuses that can midwife these convergences, bittersweet encounters and monsters, we can begin to make a transition from an Enlightenment-centered view of the world—based on the utopian vision of New Atlantis, a society shaped by science that gave rise to the modern city, towards an incompletely characterized “Ecocene”—a time of flux, uncertainty, diversity and instability, by shaping the values on which our decisions are founded through iteratively explored, experimental practices that are evaluated through “being-in-the-world” and the sensibilities of “living”.

Keywords: Ecocene, flux, edible beauty, metabolism, transformation, ecological

INTRODUCTION

These are contrary times at the start of the third millennium, where we are making a transition between one mode of existence and another. Specifically, we have one foot firmly in an Enlightenment culture and the other in an emerging ecological era, or “Ecocene”. The slippages between these perspectives are perhaps most acutely experienced through our encounters with the material conditions of the world. While our planet has always been a complex, turbulent system, Enlightenment approaches have created apparatuses that equip us with an apparent degree of control over the natural realm—but they also impose a degree of stasis, hard control, determinism and unflinching inertia. Yet, as the side effects of industrialization, with its relentless consumption of natural resources and fouling of our environments, set up feedback loops that destabilize the very systems that sustain us, the hyper complexity, and nonlinear character of the biosphere evades our ambitions to bring these runaway consequences back under our control through the tools of modern synthesis. These are experimental tools, and fundamental findings that integrate genetics, paleontology, systematics, and cytology within a system of biological thought that prioritizes mechanism over population-scale phenomena. Currently “parametric” design forms the backbone of operations, which generates a digital model that allows architects, scientists, and engineers to select a few dominant variables (e.g. sunlight, stress, prevailing wind) and view variations in a narrow range of valued impacts on a site or structure. Yet, although many parameters can be examined, they are not infinite and still operate within a finite range of possibilities, while also continuing to reflect Vitruvian ideals of commodity, firmness and delight. Indeed, classical science does not measure human values through these lenses—it instrumentalizes them. In this nightmarish situation where we claim objectivity by removing the body and its feelings from this world, meaning in our world slips and slides around us as rivers of numbers and abstractions that are dissociated from their material relevance. Yet, the harder we try to ‘solve’ the unfolding ecological catastrophe, the more it evades our attempts at resolution. Currently, we are reaching the limits of modern technology to address the challenges of “wayward” nature and are faced with the daunting prospect of reimagining our position within the world and the way we construct the idea of value in the Ecocene (Morton, 2009).

LEGACY OF THE ANTHROPOCENE

Half a millennium of Enlightenment thinking that has characterized the Anthropocene has not helped our ability to quickly adapt or change our values and practices. It has given us the impression that virtuosity is more valuable than lived experience. Indeed, we prefer to belligerently hold on to what we already know to be true and do more of it, more quickly and efficiently. Since we are looking for rapid amelioration to the catastrophe that is falling like earthquake rubble around us, we are more likely to rebrand, rather than re-evaluate, so that it feels like we are making a difference. In an age of representation, where the deceitful senses were cast out of our discourses of truth we look for symbolic reassurance that we can overcome our great challenges. Hence, we speak of “green” architectures, “biomimicry”, and “sustainability” while fundamentally implementing these ideals using exactly the same kind of approaches that caused our problems in the first place. In fact, we regard matter as being problematic, distancing ourselves from “base” materiality. We prefer a lighter,

smarter, ephemeral “information” space that is based on abstraction, mathematics, semiotics, GPS, big data, and computer modeling. Yet, while these systems may provide an all-seeing eye on the scale of our challenge or help us better understand the current changes through visualizations; none of these tools enable us to directly engage with the natural realm on its own terms. We are therefore left speaking in phenomenological tongues—as we have one set of ideas about the way the world should work and another dataset that is providing new discoveries about its actuality, and the way that matter works—often in surprising ways. For example, the recent discovery that the luminous realm is only five percent the whole of reality, the rest being composed of dark matter and energy, should at least give us pause for thought in our rationalization of the present, even if we have no idea how exactly to use this information.

In the attempt to reconcile our capacity for thought with action on the material realm—Lucretius’ great paradox—through the idea of multimodal convergences, we are faced with how we reposition ourselves with the strangeness of matter and its vast, incalculably complex character. However, this third millennial materiality is not the same set of substances that Descartes cast from their brute connections with the soul. Rather, it is innately enlivened, stranger, and darker. Enlightenment perceptions of reality seek a hierarchically ordered realm that is deterministic and deals with small, highly controlled challenges that are performed at equilibrium states. Third millennium materiality, instead, opens the portal to a probabilistic, massive, softly engaged realm that operates at far from equilibrium, whose modes of articulation, interpretation and understanding are only just beginning to be developed. It is not that these modes are therefore un-scientific; they are simply at the cusp of our understanding of a dominant scientific practice, its specific way of looking at the world, and its technological portfolio. Yet, the immensity of third millennial challenges are requiring us once again to deal with unknowns, which is a position that the Enlightenment promised to banish with discoveries such as radio waves, gravity, and cosmic radiation.

Although modernity has come far in its engagement with a world that was once shaped by idiosyncratic beliefs, we still do not understand everything. As we attempt to name and model the present reality, we begin to appreciate its guileless inconstancy, which challenges the old ideals and dichotomies, measuring systems and narratives that have dominated Enlightenment thinking. In their place, stranger, more contrary ideas that resist simple resolution are taking hold. For example, the idea of “dark” ecology, which is full of uncomfortable paradoxes and nightmarish juxtapositions of comedy and tragedy where different knowledge sets and practices collide, offers a strangely incomplete, yet informative view of the unfolding ecological catastrophe (Morton, 2016).

EXPERIMENTAL ARCHITECTURE AND TRANSDICIPLINARY SYNTHESIS

Experimental architecture addresses these perpetual contradictions and inconstancies through the art, practice, and exploration of experiment, which is not classically scientific since it is not driven towards a particular outcome, like solving a mathematical equation. Rather it aims to explore the complexity of reality by focusing

on irreducible experiences like, trying to describe the taste of coffee. While Aaron Betsky notes that at the end of the second millennium, the visionary practices of experimental architecture as practiced by Peter Cook and Lebbeus Woods, may be considered a comment on postmodern irony whereby “disturbance in the known and the expected was the leading edge of Postmodernism” (Betsky, 2015), the juxtaposition of thought with material effect through the experimental process becomes a negotiable catalyst for change. Indeed, Woods found resonance with Leonardo da Vinci, who he considered an architect of indeterminate form exploring parallel worlds through “analogy” (Woods, 2010). In a practical context, experimental architecture seeks to include a whole range of knowledge practices and iteratively uses a variety of laboratory spaces and instruments to interrogate the contradictory landscapes we inhabit, so that informed decisions may be made about the choreography of space, which includes and embraces discoveries made by the tools of modern synthesis like synthetic biology and molecular science, without insisting on their universalization.

Rolf Hughes observes that from a hands-on perspective experimental architecture engages with the integration of new research methods, artifacts, performances, and encounters. He identifies its contribution to knowledge as taking place through *storytelling as transdisciplinary synthesis*, which becomes key not only to developing the scope of research itself, but also its capacity to link and connect forms of expertise previously kept apart. Central to its process is the replacement of Enlightenment metaphors and analogies with those from the emerging Ecocene, which may provide the means to develop alternative—if not radical—knowledge structures, value systems, and cultural impacts. Experimental architecture therefore positions bodily experiences as the central integrator of knowledge-making. This way, instead of rational, sterile, highly controlled centers of knowledge that characterize the modern laboratory, it offers a counterpoint through **an engagement with “messy” highly distributed laboratories, which are closer in character to ‘real’ world ecosystems.** These unregulated spaces may expand our capacities to innovate and produce alternative narratives that resist centralized order. Such stories can facilitate hitherto “impossible” encounters that enliven our capacity for disruptive, innovative inquiry that, in turn, sustains and enriches our knowledge of an ecologically stressed planet. Such research methods imply a need for new evaluative criteria that both speak to established notions of research *quality* while yet respecting the specific characteristics of each disciplinary contribution, which invoke feelings, memories, aspirations and passions. These evade resolution and reside within the terrains of poetry, magic, and monsters to give rise to a rich platform for new kinds of juxtapositions, synthesis—and insight (Hughes, 2016).

BEING IN THE WORLD AS VALUE CREATION

Value creation within a third millennial context asks us to exceed the established tropes and portfolio of architecture, which have always been subject to intense negotiation. Yet, with the re-centering of the body in the production and choreography of space the practice exceeds the choreography of space and engages with many more elements that slip outside architectural conventions to become “worlding”. This question of “worlding” is at the heart of my practice. The term is associated with Martin Heidegger’s notion of “being in the world” and speaks of the

actual process of living as fundamental to how reality is conjured, produced and orchestrated.

It is within this context that I will offer bittersweet values that gesture from living in the belly of Hell and moving from catastrophe, not towards a utopian Eden and final resolution of all our difficulties. It is about constructing a Babel of ecological contradictions through which we may discover new languages and modes of survival. There is no happily ever after promised in the pursuit of this question. Indeed the pathways towards this state of affairs is only littered with risks. And yet, tired of the conflicts that forced upon us **through** modernity's war **by** stealth (Latour, 1993), it is a journey that we must embark upon to stand a chance of making meaning that speaks directly to these inconstant times and does not stray from what Donna Haraway refers to as the "trouble" of being in this world (Haraway 2016).

By placing the human experience at the center of valuating architectural experience, experimental architecture begins to construct ethics, principles, instruments and apparatuses that enable their interrogation.

EXAMPLES

The Temptations of the Nonlinear Ladder

The Temptations of the Nonlinear Ladder is the name of a contemporary circus performance that took place in April 2016 at the Palais de Tokyo as part of the *Do Disturb II* festival. Collaborators were Rachel Armstrong, Professor of Experimental Architecture, Newcastle University, UK, Rolf Hughes, Head of Research, and University of the Arts, Stockholm, and Olle Strandberg from Cirkör LAB, part of Cirkus Cirkör, Sweden. Performers used an exploratory instrument that comprised a 5-meter diameter black "scrying" pool that provided a highly transfigurative site and portal to another plane of existence through the reflections, refractions, and scattering of light on its surface above which a reflective metal disc on a pulley system was suspended that would safely take the weight of the performers. The space was backlit with bowls of medaka fish (*Oryzias latipes*), the only vertebrates to breed in nonterrestrial conditions. During the 3-day experiment, circus performers explored how to use fractured images from the unconventional light in the space to generate nonlinear ladders—bridges between planes of existence—that transformed their bodies and fused them in unexpected ways with the fish that were adapting to life without gravity. The performers produce unstable, ectoplasmic expressions of new spaces between elemental realms—earth, air, water—and created images of new bodies for themselves. This project explored the ascension of creatures from one plane of existence to another through a nonlinear ladder; a transitional and contextualized space that challenged established ontological systems to create the conditions for alternative modes of being.



Figure 1. Performance space for *The Temptation of the Nonlinear Ladder*. Palais de Tokyo, Paris (Photograph courtesy of the Author, April 2016).



Figure 2. Circus performer Methinee Wongtrakoon in *The Temptation of the Nonlinear Ladder*, Palais de Tokyo, Paris (Photograph courtesy of the Author, April 2016).

Yet, the valuation of such an experiment where there are no obvious baseline experiences requires us to reconsider our conceptual framework for the production of space and the way we inhabit the world at this uncertain time. An iterative, experimental, immersive, and sensible process is required where empiricism is not enough to create meaning but requires our bodies to feel and understand the actual situation we are facing, rather than stay at a distance from its representations and mirrored reflections.

Edible Beauty

With the potential blossoming of alternative types of habitation, it is critical that we

begin to establish ways of embodying those value systems that articulate the nuances of experience such as understanding the idea of “beauty” in an ecological and ethical context. This way we can begin to see the world again without being paralyzed by cynicism and irony. Such experiential shifts of being in the world empowers designers in making choices and evaluating the whole portfolio of approaches they may use for better dwelling in the world, which implies a critique on the status of architecture and the qualities of space that shape the urban environment. A classical value such as “beauty” invokes potentially sublime relationships between people, and is historically entangled with the idea of “goodness”. An alternative, coherent reading of such a value systems has been provocatively articulated by Salvador Dalí. The famous artist subverted the classical discourse by proposing a “cannibalism of objects” that spoke of a “terrifying and edible beauty” (Dalí, 1998, pp. 193–197). Dalí used his paranoiac-critical method to invoke a great, edible, decompositional, psycho-sexual, and ecological effect. Often profoundly phagic, where one system literally engulfs another in an unending writhing mass of bodies, objects, systems, moods and images, Dalí’s obsessions confound expectations and regain their coherence to propose a new kind of synthesis—through symbiosis and reincarnation. Dalí located these transformations within the realm of psychotic conditions. The physical nature of ecological systems, though, can literally (re)materialize these transgressions and transformations in ways that have the capacity: 1) to change our worldview, value systems, and encounters with the living realm on one hand, and 2) to physically act upon them on the other hand, so that its qualities begin to influence living agencies—from bacteria, to forests, soils, air, and oceans. Beauty may now be discussed as a collective quality that is no longer superficial but shares ontology with the potency of matter that possesses a deep connection with life, diversity, vital exchange, and all its radical transformations. Edibility now becomes the cornerstone of an alternative aesthetic that is not limited through the classic framing of the body but is also extended into the decomposing matter and its landscapes. There, beauty links the cycles of life and death and does not necessarily bring out “the best” in us. While venerated—beauty may provoke sadistic acts of admiration like, putting something on a pedestal, stalking behaviors, jealousy, or various forms of control and defilement. In keeping with the bittersweet and uncertain nature of these times, the idea of beauty is not rewarded with preservation, immortality, or a worshipful status, but has a precarious relationship with its ecologies of interaction, as in this strange tale of male animal beauty by Leonora Carrington:

No animal or bird ever looked so splendid as did Igame in his attire of love. Attached to his curly head was a young nightjar. This bird with its hairy beak and surprised eyes beat its wings and looked constantly for prey among the creatures that come out only at the full moon. A wig of squirrel’s tails and fruit hung around Igame’s ears, pierced for the occasion by two little pikes he had found dead on the lakeshore. His hoofs were dyed red by the blood of a rabbit he had crushed while galloping and his active body was enveloped by a purple cape, which had mysteriously emerged out of the forest. He hid his russet buttocks, as he did not want to show all his beauty at one go... Igame was looking deeply at himself in the water. The hunters fired, and the dogs finished him off. They put Igame into a big sack and said, “This one will do for the bistro in Glane, we’ll get at least a hundred francs.” (Carrington, 1988, pp. 7–10)

“Beautiful” architecture now springs from the entrails of abject terrains, pulses with

nonlinear vibrancy, congeals and dissolves through metabolic connection, proposes evolutionary characteristics and asserts the potential for radical transformation. Rather than being caught in a fantasy of unchanging, ageless surface appearances, immortality, and faultless geometries, we now encounter a world that celebrates its continual adaptations to changing needs, society, decay, decomposition, putrefaction and ecology—where designers, the public, and even nonhuman agents are actively engaged in the construction and editing of our living spaces by linking metabolic webs and spirals that connect the living and the dead. Notwithstanding, this is not an imperial decree for the conditions of existence, but encourages a continual reworking that may, for example, occur through “local” opportunities, indigenous histories, and cultural preferences. An example of “beautiful” ecological architecture perhaps would now be the “Intelligent Building”, or BIQ house in Hamburg, which pumps living organisms and air through its panels, where pond slime munches on carbon dioxide and sunlight to create biomass. Yet it knits these solar exchanges among infinite globular ripples, which rise as hypnotic jellyfish. Their magnificent strangeness is reminiscent of leaping flames that bubble, or boil into molten wax columns that rise in globular forms as if within a lava lamp column—not formally “alive” and yet far from being inert—passers-by stand trance-like momentarily under their spell. However, it is not the object that is beautiful. The building shell is minimal, featureless, undecorated, and rather joyless. Beauty is found in those moments where the light shatters through the liquid surfaces, and sparkles dance on fleeting membranes as soft kaleidoscopic mirrors layer image upon image twisting and contorting them into relentless moments of color, form, poetry, delight, which cross-contaminates, metabolizes, transforms, and vanishes—again, and again, and again. This spectacle is not the same today as it was yesterday—when it was raining and the precipitations dragged their dirty fingers down the pane, so that chalky phantoms appeared to be rising out of the tank like skeletons from a grave, more in keeping with the grotesque than the sublime. Such inconstant beauty, shared by the moon and the sun, vexes our encounters with these tempests that relentlessly shake and unsettle our senses, so that we can no longer declare the “true” nature of things. For many things are true. Their constancy is shaped by perspective and contexts, which is very different from the character of Platonic truths. Of course, this is not everyone’s idea of sensory transcendence, where beautiful architecture cannot be defined, or fixed by a set of universal rules, traded with, or defiled, but remains sensitive to its many contextualized relationships and to the preferences of its inhabitants, communities, and other (nonhuman) observers. Thereby, it retains plasticity and meaning within a world in flux, where beauty relates to a complex relationship about the civilizing of appetites that are materially transformed through birth and death. This sublimation could be called “*le petit mort ecologique*”. It starts a new conversation about beauty—made with subversive materials some of which are nonliving, some are in the process of putrefaction, and others are fully “alive”.

Future Venice

New meaning can now be explored within the character of urban landscapes through the construction of narratives by using a whole portfolio of approaches, which begin to reveal previously hidden characteristics under superficial veneers of construction. By observing places differently our habitats begin to acquire an alternative character, whereby a new kind of complex, value system condenses in the inhabitation of spaces.

Rather than the sublime imagery conferred by biomimicry, experimental architecture generates narratives at a time of environmental apocalypse that seek alternative metaphors and symbols particularly at a time of postindustrial decay, and a biosphere that is riddled with its poisons. Yet, catastrophe does not imply a sudden eradicating of life but the occurrence of odd transformations in which toxic landscapes and their inhabitants are challenged to find a pathway of ongoingness against seemingly impossible circumstances—for this is life's three and a half billion years unbroken legacy. We are reminded that the great extinctions are full of incomplete adaptations like scorpions that defecate through the tips of their tails, which at in-built lines of weakness grow back through autotomy, when their bodylines tear and heal under times of stress. Perversely, after the writhing tail and its digestive tract is shed, the creature never fully recovers when a new appendage grows back, since the anus is not regenerated. While new tailed scorpion abdomens swell from the build-up of excrement forcing tail segments to break off to providing temporary relief, these seemingly regenerated creatures are tortured in perpetuity from the inside by their own waste products. And so, the polite perfection of the natural realm and the exacting designs suggested by biomimicry and the sweet efficiencies of biological systems take on a different character that is darker, stranger, and precarious.

Indeed, the Ecocene is a time of bittersweet optimism and relentless creativity that invites its life forms to tread strange, alternative pathways towards uncertain futures. The city of Venice is one of these creatures that sprung from the mud between the ninth and twelfth century, when the city-state of Venice was born. Using the latest technologies of the time, agrarian land drainage techniques made soft silts livable through digging canals and opportunistic bridges gushed out between islands to form twisted walkways, like briars. Then, by networking about a 118 islands together, the city accreted its present form through these structural weeds. Yet, when we walk through Venice looking for the story of its construction, we encounter it the wrong way up.

The teetering city has maintained a tenuous skyline absent of vertical lines for over a millennium. It clutches the ground with its woodpile heels, just about staying upright by virtue of the enforced camaraderie of oblique buildings that lean on each other, with unlikely struts, pins, and braces. This architectural uncertainty produces a rich tapestry of peculiar and ornate forms where spaces are linked from inside to outside with metal piercings, corseted to fall inwards, or pushed apart by brick piles at the apex of narrow alleys where roofs almost touch in triangular formation. At other points, bridges subtend odd angles to negotiate the structural scrum between walkways, water, and walls. While the city tilts and twists, the silt swallows the ground. It is here that we find our first traces of living bricks, the creatures that steady the soft delta earths—calcareous algae, biofilm producing microorganisms, barnacles, oysters, mussels and tenacious sabellariid worms. Venice is a creature of shoreline slurry—a glimmering mudfish. If you flip the city on its back you'll see the carefully constructed details of its organic underneath. The "living stones" of Venice, offer myriad of typologies that mirror John Ruskin's analysis of the architectural details of the city, and sift the lagoon's silty water for slime, grit, industrial waste, household effluents, marine condiments, and countless garbage garnishes. They choose their building materials from these broths to form hardy bioconcretes that both bind the brickwork and chew on its bones so that—around its edges—Venice is constantly

reinventing its boundaries, its lands and its communities through countless, unregulated, dynamic processes.

This is where Venice becomes interesting. Like all settlements, it is founded on rich soils that offer provision for its inhabitants, the founding communities being forced to seek the safety of extreme mud flats to escape invasion. These ancient migrants had to find ways of adapting to the wetlands in ways that natural organisms are already able to. So, if you examine the city's underbelly alongside the palimpsests of agrarian technology that sought to drain and firm the silt, you will also see evidence that the city's foundations are already "living"—where nonhuman communities flourish alongside the human populations and become part of its founding stones and stories. These collectives of biofilms are inclusive, biodiverse sites that leak carbohydrate scaffolding into long threads of matter, and clean the watery world around them, like a kidney. Gradually, these civilizations lay down living stones that they harvest from the sediments in the lagoon. Seeking further modes of attachment in the waterways, they claw erosions in the buildings and gnaw at the foundations where they splay into sites of further decay. In these constantly shifting material fields, these communities are digesting and reshaping the city's boundaries, re-drawing territories and directing resources. Tirelessly these metabolic materials equip Venice with a living layer that enables it to negotiate its survival in an ongoing struggle against the shoreline elements—just as a creature does—navigating the impacts of waves, wind, tides, sunlight, desiccation and organic invasion. All the while these tiny cities are synthesizing their options through Venice's living stones, so that we are kept guessing about what this highly active structure might become.

In 2008, we began to ask whether it was possible to turn around the fate of Venice, which owing to devastating changes in its relationship to rising water levels, is likely to be claimed by the sea. By equipping it with some of the properties of living things, the city may actively fight back against the elements in a struggle for survival—like creatures do—and so, adapt to its changing conditions in ways that we would normally associate with living systems. "Protocells", which are chemically programmable droplets, were used as a possible platform that could potentially transform inert to living matter, by wrapping a synthetic coating, or "biocrete" around the buildings' foundations. Yet this technological system was not based on biology, but the chemistry and physical properties of dynamic matter and possessed simple metabolisms. Demonstrations were conducted in the laboratory to show proof of principle. They were also held by the side of the Venetian lagoon in experimental tanks, which had been transported into the field so that 'live' observations could be made on site. Potentially, such a system could transform the physical properties of the city from its traditional use of inert materials such as wood, brick, and stone, towards something that shares some of the properties of living things, acquiring an outer surface like a growing reef, and so initiate the construction of a protective limestone shell around the foundations of the city by biomineralizing Venice's wooden foundations. These are under particular threat by the traffic from large cruise ships whose wakes suck the preserving salt water out from under the foundations, leaving the foundations exposed to the air, where they rot. With time, the bio concrete-stimulating droplets then would form a kind of protective kettle-limescale during these times and even build up a residue that could repair erosion of materials at the tidal zone in some specific locations. Field studies to identify possible sites for testing the technology revealed that the natural marine wildlife was already carrying out a

metabolically vigorous version of this process. This suggested that it might be possible to find ways of orchestrating a whole range of events between the biological systems in the lagoon, the chemical technology and the concrete-forming processes in the waterways to produce a synthetic platform, which was potentially programmable (Armstrong, 2015).

While “protocells” were an early exploration of the capability of designing and engineering with materials that possess the characteristics of living things, and were a valuable lens for breaking down the expectation of material performance associated with a traditional architectural portfolio, a more robust apparatus was needed to take the insights into another stage of relevance in relationship to the city and its inhabitants by incorporating the metabolic potency and ranges offered by biological systems into the synthetic choreography. In other words, the technological apparatus was no longer one species of device, but an interacting range of agents with mutual and transformative relationships.

We had explored the ability of natural biofilms to attach to discarded plastics, and thus potentially produce a hybrid material and fabric for a new island within the Venetian lagoon, as a pre-proof of concept series of experiments entitled *Future Venice II*. Afterwards we have begun working with technology based on the microbial fuel cell (MFC), an organic battery powered by the anaerobic metabolism of microorganisms. This has become the infrastructure for the current project *Living Architecture*, or *L/A project* (April 2016 to 2019). This work in progress is also situated in Venice and extends the design conception of working with living systems by bringing together the sciences, design disciplines, and the arts to explore the possibilities of “living” in the broadest sense of the term in the third millennium. The €3.2M scheme is a next-generation, selectively programmable bioreactor. It includes experts from the universities of Newcastle (England), the West of England (England), and Trento (Italy), in collaboration with the Spanish National Research Council (Spain), LIQUIFER Systems Group (Austria), and EXPLORA (Italy). The technology is envisioned to function as an integral component of human dwelling, capable of extracting valuable resources from sunlight, waste water, and air—and in turn, generating oxygen, proteins, and biomass through the manipulation of their interactions. The goal of L/A is to design and build a proof-of-concept “living architecture” whose targeted breakthrough is to transform our habitats from inert spaces into programmable sites. Developed as a modular bioreactor-wall it aims to extract resources from sunlight, wastewater, and air. The “building blocks” are conceived as standardized building modules that fit together and create “bioreactor walls” which may then be incorporated in housing, public buildings, and office spaces with value notions that speak to a “circular economy” and also by functionally retrofitting our living spaces with improved performance criteria such as making electricity from organic sludge and finding new ways to power our homes and cities.

The first prototypes are “living bricks” which are part of the story of an alternative future for the historic city and begin to specifically articulate how relationships between human habitation, technology, and nature may be shaped through a mutually beneficial relationship. While specific outcomes are not specifically directed towards the mineralization process at this stage, they are being made available to the local Venice community so they can be directly interrogated.

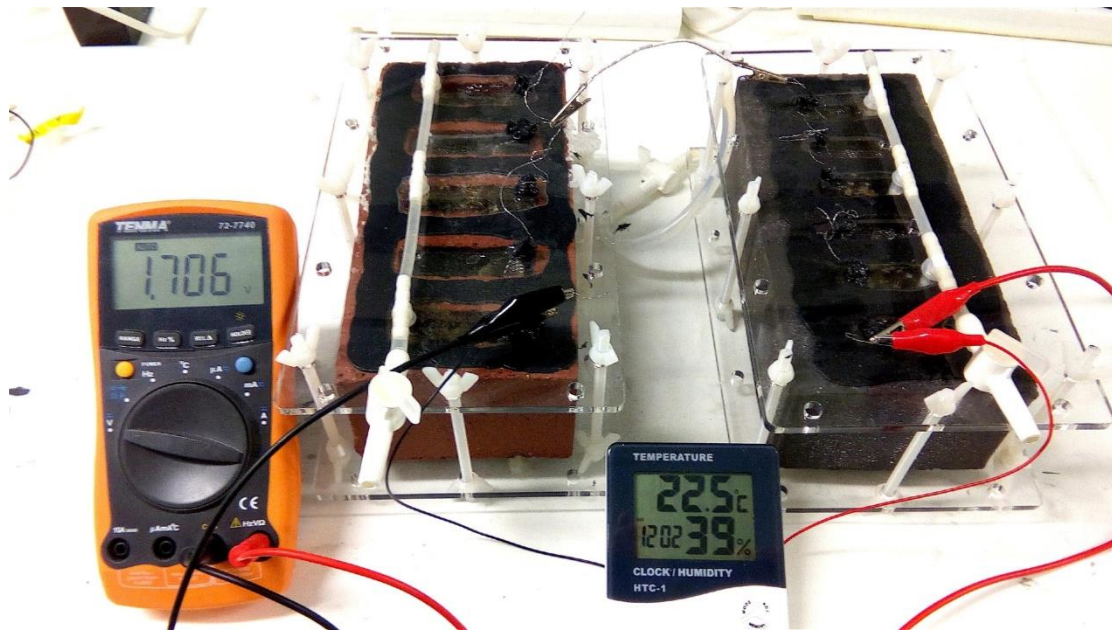


Figure 3. Living bricks produce enough metabolic electricity to power an electronic device while making clean water and detritus (Image courtesy University of West England, October 2016).

It is hoped these apparatuses may be useful in addressing real challenges within Venice and other places further afield, that do not offer a solution to a particular grand challenge, but help construct increasingly relevant prototypes that articulate the choreography between agents with complex relationships and enforce various approaches to optimizing and differently address some of the pervasive problems of human habitation. For example, living bricks may deal with our waste differently, provide clean water for everyone, or create rich composts for urban gardens, so that we may no longer be passive in our relationship with these spontaneous natural processes. It creates a context in which we may begin to “speak” chemically, physically, biologically, mechanically, and even digitally (through electricity) with the living world. Of course, this ambition is aspirational but creates the conditions in which we might be able to see the possibility of a better and more symbiotic relationship between cities and the natural world, and with this possibility an ethical, mutually beneficial, ongoing future for both human and nonhuman alike.

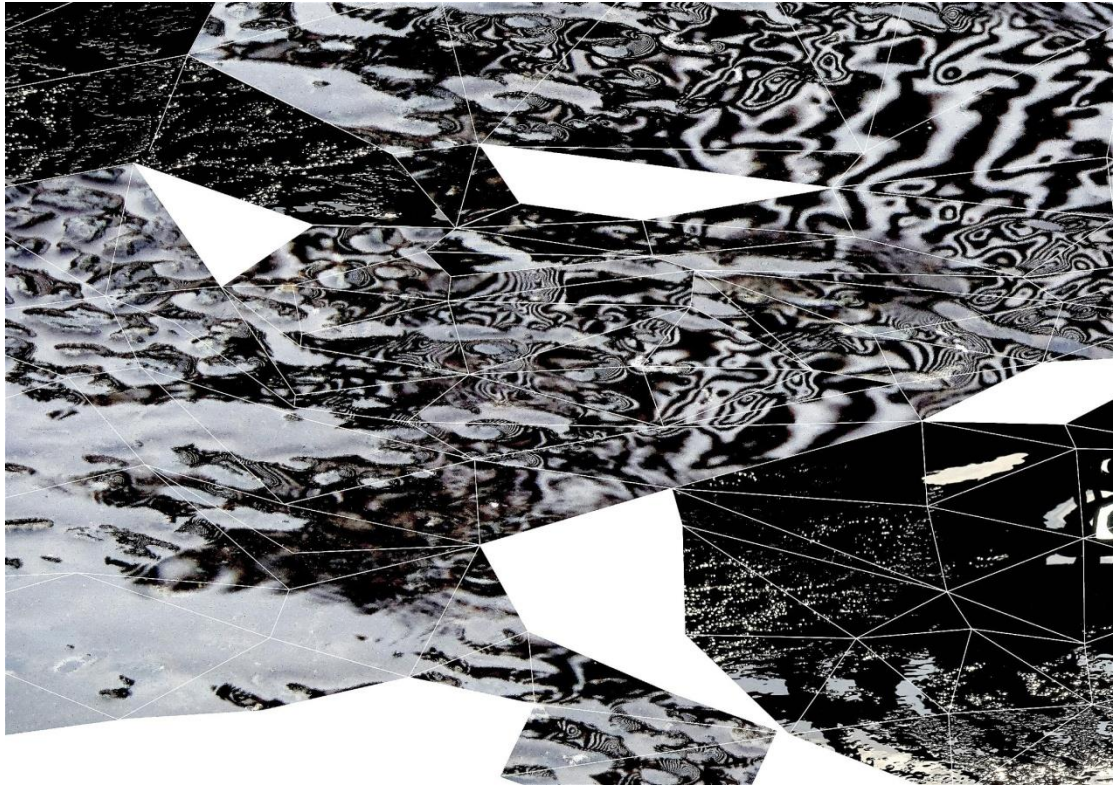


Figure 4. Detail from a “living brick” design. It indicates the complex forces that are working at the micro scale within the field of operation of a living brick. The technology provides us access to these highly complex environments and explores how we can orchestrate exchanges between the digital and organic worlds to produce useful events and materials that have the potential to transform our homes and cities into sites that work alongside natural forces, rather than consume them (Image courtesy Simone Ferracina).

Yet, such projects are ongoing and necessarily incomplete. Indeed, experimental architecture is a form of knowledge and value making that is fundamentally synthetic, rather than analytical, reductive or expert—it is a collision, remodeling, and propositioning of material events and their teleologies as an active coupled exploration of *being in the world*—where “the world itself is part of the fundamental constitution of what it means to be human” (Critchley, 2009). At the start of the Ecocene we are faced with the task of reconfiguring our relationships to matter, space, time, ecology, and each other in an ongoing birthing, testing, and experiencing of alternative spaces, disciplines, concepts, relational possibilities, collisions, contradictions, subversion, and paradoxes. For it is only by clashing matter, ideas and values together—and inhabiting them—that we may challenge what we assume to be true, and find new meaningful ways forward that we rehearse until they become adopted as culture—rather than become stranded in an ironic island of intellectual inaction from which we disdainfully watch our world boil and drown, declaring to the sweet melody of a Kurtzweil keyboard violin: “There, we told you so”.

FROM HELL TO BABEL

There is no remedy for the present apocalypse. The tipping points of the world we once thought we knew, have already collapsed and irreversible changes are afoot. There is simply no going backwards from our present situation. While we can limit further damage through considered remediation and make ourselves more comfortable by clinging to familiar experiences and modes of existence for as long as we are able, this is not the same as developing a new paradigm for worlding—the way we shape, dwell, and establish meaning in our habitats. Although such a task seems daunting, impossible, harder to imagine than the end of the world—we must take our first steps by accepting imperfection, risk, change, uncertainty and chance with no more intellectual or technical status than that of the amateur. While we provoke the unknown, we will not remain in this state of unknowingness. As we immerse ourselves in strange assemblages, prototypes, models, installations, and enactments, new modes of thought, forms of making, and expert practices will begin to condense. In orienting ourselves around these spaces and reading its fields and interfaces like language, it may be possible to generate new kinds of design, whether metamorphic entities precipitate fresh downpourings of words and ideas that enable strange things to spring up everywhere—even from out of the ground. Worlding embodies rather than represents the processes it discusses by curating and producing texts, ideas, quotes, themes, poetic expressions, narratives, and stories, which are collided to become condensations of new modes of thought. Through experimental architectural inquiry—that engages with a sensible relation to reality—a form of choreography emerges that suggests the beginnings of a theatrical space and performance laboratory for the practice of worlding and becomes an apparatus that generates meaning for our living spaces. As such, we are no longer building homes and cities but constructing parallel worlds that offer insights and tactics about how new experiments may keep us off balance in our thinking so that we evade consensus, universality, homogeneity, and equilibrium. In this *weird Baroque* of performance, drama, tension, exuberance, grandeur, experiment, and the poetry of life, the seeds that enable us to invent new stories about our collective livability mark our first steps towards a (re)worlding of this planet. Observed from within a Cambrian explosion of design choices, excesses, diversity, and an abundance of vibrant spaces we find ourselves moving away from an apocalyptic Hell towards a precarious ongoing existence within an emerging Tower of Babel. Through forging new value systems, we will re-engage with multiple acts of diplomacy to find coherence in the diversity of experiences and paradoxes that these changing times provoke, which will gradually become comprehensible and even familiar to us. The time of homogeneity, theories of everything, Platonic ideals, universalities, and one-stop techno-fixes that characterized the Anthropocene, will be subsumed by a flourishing of possibility and further refined by the processes of living. Indeed, the richness of our experiences within these challenging times and strange spaces will be the way experimental architecture progresses architectural discourse and articulates its emerging values. By enriching the material flows and movement within our living spaces we may generate alternative choreographies, which are asserted through their own poetics and articulated in sensible metrics. No longer will our buildings be constrained by existing conventions of empirical assessment—such as post occupancy surveys and energy efficiency evaluations—but will even spill into spaces beyond our native and terrestrial environments, from which new modes of existence will become possible. The values that characterize these spaces will embrace risk as a condition of existence and develop a broad palette of lively multi-materialities inhabited by radical bodies, which incessantly coalesce to provoke new encounters with the places we inhabit.

Architects that work with these conditions will encounter fuzzy surfaces, cloudy vistas, fragile details, quantum logic, soft scaffoldings, and all kinds of teratogenic in-betweens that infiltrate the spandrels between the mineralized bones of industrial construction. Yet these nascent terrains and complex, fertile substrates do not claim to provide totalizing solutions to the constantly unfolding multiplicities and challenges that we are facing. Rather, they catalyze new opportunities for invention by providing an emerging palette of new possibilities and paradoxes from which we may birth new kinds of architectures, urban environments, and communities. In this way the built environment shares a common project with the natural realm that can be shaped by new values and ethics through the production of life's poetry and our mutual, continued survival into an ever-unfolding adjacent possible that is full of surprises, which can enrich societies, cultures and the world itself—so, despite ongoing catastrophe—everything is still to play for.

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